

Date:**Lesson Title:** 3.3 Time-Distance Relationships**Objective:**

- Write walking instructions or act out walks for a given graph.
- Sketch graphs based on given walking instructions or table of data.
- Exit slip with graph & explanations

IN:

Solve:

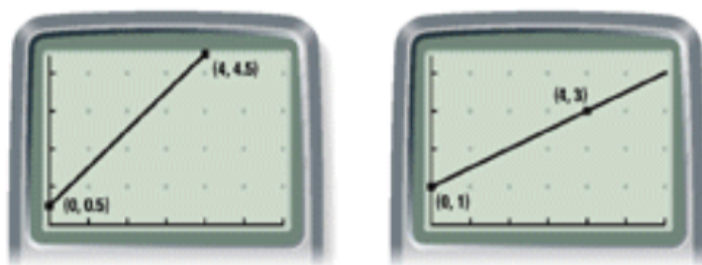
A. $25(x + 7) - 33 = 92$

B. $13 - 2(y + 4) = 9$

C. $\frac{8(3 - 4z) + 6}{11} = 14$

Aug 26-9:45 AM

The graphs below provide a lot of information about the "walks" they picture.

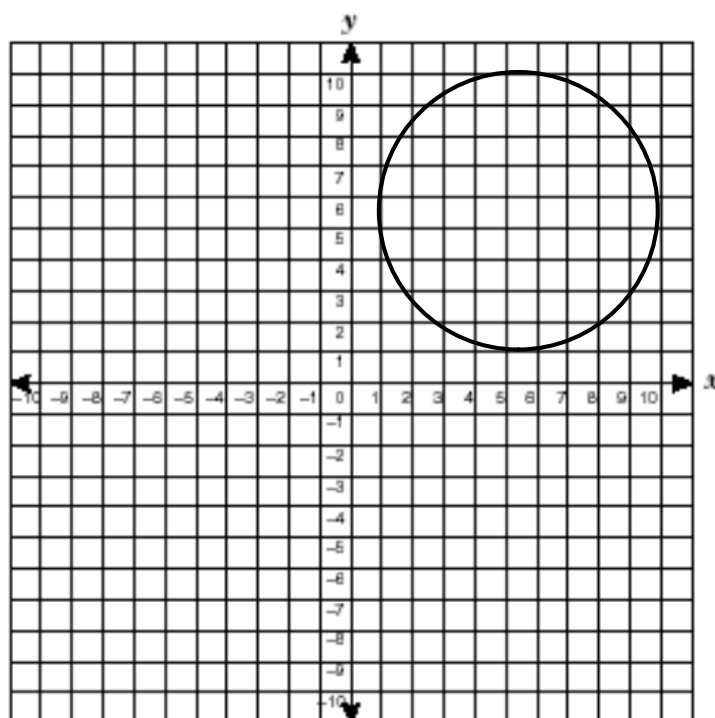


The first walker starts 0.5 meters from the sensor, whereas the second walker starts 1 meter from the sensor.

The first walker walks 1 meter per second, while the second walker walks 0.5 meters per second.

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How would a walker walk to produce this graph of a circle?



Oct 12-7:57 PM

Walk the Line investigation

Remember the Group Norms?

Investigation Handout

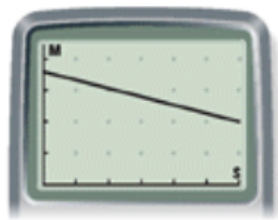
Complete Steps 1-5 in your group.

Oct 12-5:50 PM

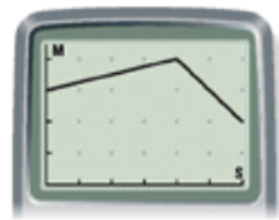
Imagine that you have a 4-meter measuring tape positioned on the floor. A motion sensor measures your distance from the tape's 0-mark as you walk, and it graphs the information. On the calculator graphs shown here, the horizontal axis shows time from 0 to 6 seconds and the vertical axis shows distance from 0 to 4 meters.



a.



b.



c.

Oct 12-8:03 PM

Step 1:

Write a set of walking instructions for each graph. Tell where the walk begins, how fast the person walks, and whether the person walks toward or away from the motion sensor located at the 0-mark.

Oct 12-5:52 PM

Step 2:

Graph a 6-second walk based on each set of walking instructions or data.

- a. Start at the 2.5-meter mark and stand still.
- b. Start at the 3-meter mark and walk toward the sensor at a constant rate of 0.4 meter per second.

c.

Time (s)	0	1	2	3	4	5	6
Distance (m)	0.8	1.0	1.2	1.4	1.6	1.8	2.0

Oct 12-5:52 PM

Step 3:


Write a recursive routine for the table in Step 2c.

Oct 12-5:52 PM

For the next part of the investigation, you will need a graphing calculator and a motion sensor. Your group will need a space about 4 meters long and 1.5 meters wide (13 feet by 5 feet). Tape to the floor a 4-meter measuring tape or four metersticks end-to-end. Assign these tasks among your group members: walker, motion-sensor holder, coach, and timer.

Oct 17-2:33 PM

Step 4:

Your group will try to create the graph shown in Step 1, graph a. Remember that you wrote walking directions for this graph. Use your motion sensor to record the walker's motion. [▶ See **Calculator Note 3B** for help using the motion sensor.◀] After each walk, discuss what you could have done to better replicate the graph. Repeat the walk until you have a good match for graph a.

Oct 12-5:52 PM

Step 5:

Rotate jobs, and repeat Step 4 to model graphs b and c from Step 1 and the three descriptions from Step 2.

Oct 12-5:52 PM

Example A:

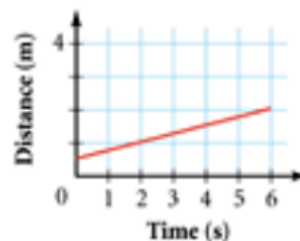
- Graph a walk from the set of instructions "Start at the 0.5-meter mark and walk at a steady 0.25 meter per second for 6 seconds."
- Write a set of walking instructions based on the table data, and then sketch a graph of the walk.

Time (s)	0	1	2	3	4	5	6
Distance (m)	4.0	3.6	3.2	2.8	2.4	2.0	1.6

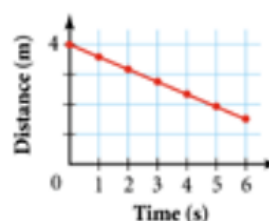
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Think about where the walker starts and how much distance he or she will cover in a given amount of time.

- a. Walking at a steady rate of 0.25 meter per second for 6 seconds means the walker will move $0.25 \text{ m/s} \cdot 6 \text{ s} = 1.5 \text{ m}$. The walker starts at 0.5 m and ends at $0.5 + 1.5 = 2 \text{ m}$.



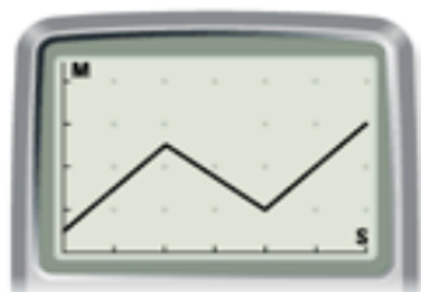
- b. Walking instructions: "Start at the 4-meter mark and walk toward the sensor at 0.4 meter per second." You can graph this walk by plotting the data points given.



Oct 17-2:38 PM

Example B:

Write a set of walking instructions for this graph:



Oct 17-2:35 PM



Start at the 0.5 m mark and walk away from the motion sensor at 1 m/s for 2 s. Then walk toward the sensor at $\frac{3}{4}$ m/s for 2 s. Then walk away from the sensor at 1 m/s for 2 s.

Oct 17-2:41 PM

Summary:**Choose one:**

- I created the graph of Mrs. Evans walk by
- Provide an explanation of why you created the graph the way you did.

Out:**On an Exit slip:**

Draw a scatter plot on your paper picturing 1 second intervals if you start timing Mrs. Evans as she walks toward Mr. Basile starting at a distance of 5.9 meters and moving at a constant speed of 0.6 m/s.

Aug 26-9:45 AM

End of Class - Have a Great Day!!!

Oct 14-9:06 AM